SEQUENCE LISTING

<110> Gray, Joe W
Collins, Collin
Hwang, Soo In
Godfrey, Tony
Kowel, David
Rommens, Johanna

<120> GENES FROM THE 20Q13 AMPLICON AND THEIR USES

<130> 2500.124US3

<140> 08/892,695
<141> 1997-07-15

<150> 08/785,532
<151> 1997-01-17

<150> 08/731,499
<151> 1996-10-16

<150> 08/680,395
<151> 1996-07-15

<160> 59

<170> PatentIn Ver. 2.0

<210> 1
<211> 3000
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:3bf4

<400> 1
ccgccggccg gggcgcctgg ctgcactcag cgccggagcc gggagctagc ggccgccgcc 60
atgtcccacc agaccggcat ccaagcaagt gaagatgtta aagagatctt tgccagagcc 120
agaaatggaa agtacagact tctgaaaata tctattgaaa atgagcaact tgtgattgga 180
tcatatagtc agccttcaga ttcctgggat aaggattatg attccttttgt tttacccctg 240
ttggaggaca aacaaccatg ctatatatta ttcaggttag attctcagaa tgcccaggga 300
tatgaatgga tattcattgc atggtctcca gatcattctc atgttcgtca aaaaatgttg 360
tatgcagcaa caagagcaac tctgaagaag gaatttggag gtggccacat taaagatgaa 420
gtatttggaa cagtaaagga agatgtatca ttacatggat ataaaaaata cttgctgtca 480
caatcttccc ctgccccact gactgcagct gaggaagaac tacgacagat taaaatcaat 540
gaggtacaga ctgacgtggg tgtggacact aagcatcaaa cactacaagg agtagcattt 600
cccatttctc gagaagcctt tcaggctttg gaaaaattga ataatagaca gctcaactat 660
gtgcagttgg aaatagatat aaaaaatgaa attataattt tggccaacac aacaaataca 720
gaactgaaag atttgccaaa gaggattccc aaggattcag ctcgttacca tttctttctg 780
tataaacatt cccatgaagg agactattta gagtccatag tttttattta ttcaatgcct 840
ggatacacat gcagtataag agagcggatg ctgtattcta gctgcaagag ccgtctgcta 900
gaaattgtag aaagacaact acaaatggat gtaattagaa agatcgagat agacaatggg 960
gatgagttga ctgcagactt cctttatgaa gaagtacatc ccaagcagca tgcacacaag 1020
caaagttttg caaaaccaaa aggtcctgca ggaaaaagag gaattcgaag actaattagg 1080
ggcccagcgg aaactgaagc tactactgat taaagtcatc acattaaaca ttgtaatact 1140

agtttttaa aagtccagct tttagtacag gagaactgaa atcattccat gttgatataa 1200
agtagggaaa aaaattgtac tttttggaaa atagcacttt tcacttctgt gtgtttttaa 1260
aattaatgtt atagaagact catgatttct atttttgagt taaagctaga aaagggttca 1320
acataatgtt taattttgtc acactgtttt catagcgttg attccacact tcaaatactt 1380
cttaaaattt tatacagttg ggccagttct agaaagtctg atgtctcaaa gggtaaactt 1440
actactttct tgtgggacag aaagacctta aaatattcat attacttaat gaatatgtta 1500
aggaccaggc tagagtattt tctaagctgg aaacttagtg tgccttggaa aagccgcaag 1560
ttgcttactc cgagtagctg tgctagctct gtcagactgt aggatcatgt ctgcaacttt 1620
tagaaatagt gctttatatt gcagcagtct tttatatttg actttttttt aatagcatta 1680
aaattgcaga tcagctcact ctgaaacttt aagggtacca gatattttct atactgcagg 1740
atttctgatg acattgaaag actttaaaca gccttagtaa attatctttc taatgctctg 1800
tgaggccaaa catttatgtt cagattgaaa tttaaattaa tatcattcaa aaggaaacaa 1860
aaaatgttga gttttaaaaa tcaggattga ctttttttctc caaaaccata catttatggg 1920
caaattgtgt tctttatcac ttccgagcaa atactcagat ttaaaattac tttaaagtcc 1980
tggtacttaa caggctaacg tagataaaca ccttaataat ctcagttaat actgtatttc 2040
aaaacacatt taactgtttt ctaatgcttt gcattatcag ttacaaccta gagagatttt 2100
gagcctcata tttctttgat acttgaaata gagggagcta gaacacttaa tgtttaatct 2160
gttaaacctg ctgcaagagc cataactttg aggcattttc taaatgaact gtggggatcc 2220
aggatttgta atttcttgat ctaaacttta tgctgcataa atcacttatc ggaaatgcac 2280
atttcatagt gtgaagcact catttctaaa ccttattatc taaggtaata tatgcacctt 2340
tcagaaattt gtgttcgagt aagtaaagca tattagaata attgtgggtt gacagatttt 2400
taaaatagaa tttagagtat ttggggtttt gtttgtttac aaataatcag actataatat 2460
ttaaacatgc aaaataactg acaataatgt tgcacttgtt tactaaagat ataagttgtt 2520
ccatgggtgt acacgtagac agacacacat acacccaaat tattgcatta agaatcctgg 2580
agcagaccat agctgaagct gttattttca gtcaggaaga ctacctgtca tgaaggtata 2640
aaataattta gaagtgaatg tttttctgta ccatctatgt gcaattatac tctaaattcc 2700
actacactac attaaagtaa atggacattc cagaatatag atgtgattat agtcttaaac 2760
taattattat taaaccaatg attgctgaaa atcagtgatg catttgttat agagtataac 2820
tcatcgttta cagtatgttt tagttggcag tatcatacct agatggtgaa taacatattc 2880
ccagtaaatt tatatagcag tgaagaatta catgccttct ggtggacatt ttataagtgc 2940
attttatatc acaataaaaa ttttttctct ttaaaaaaaa aaaacaagaa aaaaaaaaaa 3000

<210> 2
<211> 723
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:1b11

<400> 2
tggaagctgt catggttacc gtctctaacg ttggactctt aagaaaatga ttattcctgg 60
tttctagaca ggccaaatgt aattcaccta cgtggcagat taaagaggtg ggcttactag 120
atttgattgg gtattgagca tgctctgaat gacagtcccc aaaaaggacc tcttatccgt 180
tcttcccctt ggggaagggc ttttgccact tccatgtcaa tgtggcagtt gagcttggaa 240
attggtgcgt tgtacaacat aagcattact tctccaagat gtgcctgtgt agaaatggtc 300
atagattcaa aactgtagct actatgtgga caggggggca gcaaggaccc cactttgtaa 360
aacatgtttt gggggaatgt tttgtttttc attttcttat tacctggcaa aataatccag 420
gtggtgtgtg agtcaccagt agagattata aagtccaagg aagtagaatc agccttacaa 480
acagtggacc tcaacgaagg agatgctgca cctgaaccca cwgaagcgaa actcaaaaga 540
gaagaaagca aaccaagaac ctctctgatg rcgtttctca gacaaatggt aagcccctta 600
cttccagtat aggaaaccta agatacctag agcggctttt gggaacaatg ggctcatgcc 660
acaggtagta ggagacataa ttgtagctgg tgtgtatgga atgtgaatgg aatatggatt 720
gcg 723

<210> 3
<211> 1507

<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:cc49

<220>
<221> modified_base
<222> (447)
<223> N is A, G, G, T, or U

<400> 3
gcaggttgct gggattgact tcttgctcaa ttgaaacact cattcaatgg agacaaagag 60
cactaatgct ttgtgctgat tcatatttga atcgaggcat tgggaaccct gtatgccttg 120
tttgtggaaa gaaccagtga caccatcact gagcttccta aaagttcgaa gaagttagag 180
gactatacac tttcttttga acttttataa taaatatttg ctctggtttt ggaacccagg 240
actgttagag ggtgagtgac aggtcttaca gtggccttaa tccaactcca gaaattgccc 300
aacggaactt tgagattata tgcaatcgaa agtgacagga aacatgccaa ctcaatccct 360
cttaatgtac atggatggcc aagagtgatt ggcagctctc ttgccagtcc gatggagatg 420
gagatgcctt gtcaatgaaa gggcccnctg ttgtcaattc cgagctacac aaagaaaaaa 480
atgtcaatcc gaatcgaggg gaatatgccc ttggattgca tgttctgcag ccagaccttc 540
acacattcag aagaccttaa taaacatgtc ttaatgcaac accggcctac cctctgtgaa 600
ccagcagttc ttcgggttga agcagagtat ctcagtccgc ttgataaaag tcaagtgcga 660
acagaacctc ccaaggaaaa gaattgcaag gaaaatgaat ttagctgtga ggtatgtggg 720
cagacattta gagtcgcttt tgatgttgag atccacatga gaacacacaa agattctttc 780
acttacgggt gtaacatgtg cggaagaaga ttcaaggagc cttggtttct taaaaatcac 840
atgcggacrc ataatggcaa atcgggggcc agaagcaaac tgcagcaagg cttggagagt 900
agtccagcaa cgatcaacga ggtcgtccag gtgcacgcgg ccgagagcat ctcctctcct 960
tgcaaaatct gcatggtttg tggcttccta tttccaaata aagaaagtct aattgagcac 1020
cgcaaggtgc acaccaaaaa aactgctttc ggtaccagca gcgcgcagac agactctcca 1080
caaggaggaa tgccgtcctc gagggaggac ttcctgcagt tgttcaactt gagaccaaaa 1140
tctcaccctg aaacggggaa gaagcctgtc agatgcatcc ctcagctcga tccgttcacc 1200
accttccagg cttggcakct ggctaccaaa ggaawagttg ccatttgcca agaagtgaag 1260
gaattggggc aagaagggag caccgacaac gacgattcga gttccgagaa ggagcttgga 1320
gaaacaaata agaaccattg tgcaggcctc tcgcaagaga aagagaagtg caaacactcc 1380
cacggcgaag cgccctccgt ggacgcggat cccaagttac ccagtagcaa ggagaagccc 1440
actcactgct ccgagtgcgg caaagctttc agaacctacc accagctggt cttgcactcc 1500
agggtcc 1507

<210> 4
<211> 2605
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:cc43

<400> 4
caagctcgaa attaaccctc actaaaggga acaaaagctg gagctccacc gcggtggcgg 60
ccgctctaga actagtggat cccccgggct gcaggaattc ggcacgagct gggctactac 120
gatggcgatg agtttcgagt ggccgtggca gtatcgcttc ccacccttct ttacgttaca 180
accgaatgtg gacactcggc agaagcagct ggccgcctgg tgctcgctgg tcctgtcctt 240
ctgccgcctg cacaaacagt ccagcatgac ggtgatggaa gctcaggaga gcccgctctt 300
caacaacgtc aagctacagc gaaagcttcc tgtggagtcg atccagattg tattagagga 360
actgaggaag aaagggaacc tcgagtggtt ggataagagc aagtccagct tcctgatcat 420
gtggcggagg ccagaagaat gggggaaact catctatcag tgggtttcca ggagtggcca 480
gaacaactcc gtctttaccc tgtatgaact gactaatggg gaagacacag aggatgagga 540

gttccacggg ctggatgaag ccactctact gcgggctctg caggccctac agcaggagca 600
caaggccgag atcatcactg tcagcgatgg ccgaggcgtc aagttcttct agcagggacc 660
tgtctccctt tacttcttac ctcccacctt tccagggctt tcaaaaggag acagacccag 720
tgtcccccaa agactggatc tgtgactcca ccagactcaa aaggactcca gtcctgaagg 780
ctgggacctg gggatgggtt tctcacaccc catatgtctg tcccttggat agggtgaggc 840
tgaagcacca gggagaaaat atgtgcttct tctcgcccta cctcctttcc catcctagac 900
tgtccttgag ccagggtctg taaacctgac actttatatg tgttcacaca tgtaagtaca 960
tacacacatg cgcctgcagc acatgcttct gtctcctcct cctcccaccc ctttagctgc 1020
tgttgcctcc cttctcaggc tggtgctgga tccttcctag gggatggggg aagccctggc 1080
tgcaggcagc cttccaggca atatgaagat aggaggccca cgggcctggc agtgagaggt 1140
gtggccccac accgatttat gatattaaaa tctcaactcc caaaaaaaaa aaaaaaaaaa 1200
ctgagactag ttctctctct ctcgagaact agtctcgagt ttttttttct ttttttttct 1260
ttttttttct ttttttttg gctttaagga tttatttatt gtttcctctt tacagtgtcc 1320
acttttctct acttaatact actttccagt ctcagaagcc cagagggaaa aaaaaaagac 1380
catgaatctt cctctcccag attaaagtac acactttgga aaacagattg gaaaaccttt 1440
ctgaaaaaag ttgactgaaa ctccaaacca acatgccata ttgttgatgt tgctcatgaa 1500
aattgttaaa aacctgttct agataaagaa cagtctcaag tttttgtaca gcctacacat 1560
agtacaaggg tcccctatga tgattcttct gtaggacgaa ataatgtaat tttttcagtt 1620
tctggtttat aactctctcg atctcagagt tgactgatta aaacacctac tcatgcaaca 1680
gagaataaag cactcatatt tttataaatt atatggacca aactattttg gaaatcttat 1740
ctattggaga cacaatatgc tggactaaag caataattat tttattctca atgtctgtgc 1800
taacctcaat gacttagaat gctttgctat attttgcctc tatgcctcaa ccacactggc 1860
tttcttttag ctcttgaaca agccaaactg cttcctgcct caggaccaga tattttggga 1920
cttctcttaa gaattctatt tccttaattc tttatctggg taacttagtt ttatccaaca 1980
cttcagatcc tgccgtaaaa actcttctta tagaagcctg tcatgacact gtctctcttc 2040
tccaacatac tcaccagcac acatgtagac tagattagaa cctcctgttt ttctttttca 2100
tacttttctc tatcatgctt ccctccatta taatattttt attatgtgtg tgaatgtctg 2160
ccccaagtca gtttcctcac taaactataa actccgtaaa gctgggatcc ttccaatttt 2220
gatcaccact tagtacagta ggaacacagt aaagattcaa ttggtatttg tggaatgaat 2280
gaatgaattg ttttgctagt aaagtctggg ggaacccagg tgagaagagc ctagaaagca 2340
ggtcgaatcc aaggctagat agacttagtg ttactcaaga aagggtagcc tgaaaataaa 2400
ggttcaaatt atagtcaaga atagtcaaga catgggcaag acaagagtgc tgctcgtgcc 2460
gaattcgata tcaagcttat cgataccgtc gacctcgagg gggggcccgg tacccaattc 2520
gccctatagt gagtcgtatt acaattcact ggccgtcgtt ttacaacgtc gtgactggga 2580
aaaccctggc gttacccaac ttaat 2605

<210> 5
<211> 1288
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:41.1

<400> 5
gagggcagcg agaaggagaa accccagccc ctggagccca catctgctct gagcaatggg 60
tgcgccctcg ccaaccacgc cccggccctg ccatgcatca acccactcag cgccctgcag 120
tccgtcctga acaatcactt gggcaaagcc acggagccct tgcgctcacc ttcctgctcc 180
agcccaagtt caagcacaat ttccatgttc cacaagtcga atctcaatgt catggacaag 240
ccggtcttga gtcctgcctc cacaaggtca gccagcgtgt ccaggcgcta cctgtttgag 300
aacagcgatc agcccattga cctgaccaag tccaaaagca agaaagccga gtcctcgcaa 360
gcacaatctt gtatgtcccc acctcagaag cacgctctgt ctgacatcgc cgacatggtc 420
aaagtcctcc ccaaagccac caccccaaag ccagcctcct cctccagggt ccccccccatg 480
aagctggaaa tggatgtcag gcgctttgag gatgtctcca gtgaagtctc aactttgcat 540
aaaagaaaag gccggcagtc caactggaat cctcagcatc ttctgattct acaagcccag 600
tttgcctcga gcctcttcca gacatcagag ggcaaatacc tgctgtctga tctgggccca 660
caagagcgta tgcaaatctc taagtttacg ggactctcaa tgaccactat cagtcactgg 720

ctggccaacg tcaagtacca gcttaggaaa acgggcggga caaaatttct gaaaaacatg 780
gacaaaggcc accccatctt ttattgcagt gactgtgcct cccagttcag aaccccttct 840
acctacatca gtcacttaga atctcacctg ggtttccaaa tgaaggacat gacccgcttg 900
tcagtggacc agcaaagcaa ggtggagcaa gagatctccc gggtatcgtc ggctcagagg 960
tctccagaaa caatagctgc cgaagaggac acagactcta aattcaagtg taagttgtgc 1020
tgtcggacat ttgtgagcaa acatgcggta aaactccacc taagcaaaac gcacagcaag 1080
tcacccgaac accattcaca gtttgtaaca gacgtggatg aagaatagct ctgcaggacg 1140
aatgccttag tttccacttt ccagcctgga tcccctcaca ctgaaccctt cttcgttgca 1200
ccatcctgct tctgacattg aactcattga actcctcctg acaccctggc tctgagaaga 1260
ctgccaaaaa aaaaaaaaaa aaaaattc 1288

<210> 6
<211> 2821
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:GCAP

<400> 6
atcctaagac gcacagcctg ggaagccagc actggggaag tggtgctgag ggatgtgggt 60
cactggggtg aaggtggagc tttcagggtc tcccgtcaat gcagctgagt tttctttggc 120
agggaattta ccagctgaag aaagcctgcc ggcgagagct acaaactgag caaggccagc 180
tgctcacacc cgaggaggtc gtggacagga tcttcctcct ggtggatgag aatggagatg 240
gtaagagggg cagagatggg gagagtgctg tccactctgc atcatcgcca ctttctggcc 300
gcacgtcctt gggcaaggcc ctccaccttc caaccctggg gtcctcatct gtgagaaggc 360
tgtggagaag atgtcatgaa ctaacaaagg gactcatgag cacgtgtttg taggagtgac 420
taaaagtcct acaggagttg ctgatggagg ccaggcacgc agaatagaaa gaataggaac 480
tttggagtca ggcagggagt gatatattga gcttctcgtc ctagtctcaa tttcctcatc 540
tggaaaatgg ggataataat agtggttgag aggaatgaat aggataatgt gtttaagagc 600
aggcataggg tagacctcca ttcaggctgc ttgggctttc ctccctgtag cccaaagccc 660
agcctcaggg ctatgtgggg agagagctgg cttggaatac acacttgagc cctccagctc 720
tctcagctcc acccagcatt tccgtggtac catgcgcaaa agtaaaactt caattcatca 780
gcaaagaaag ccccttaaag gtggcaggag actcctggag attcagacac ctgacaagcc 840
gcaagcttga ggtctgagac tgcaggatag ttggcataag acgtgtaggc gcatcctggg 900
agcgaggtct ctcctcctgc ccccagaccc aggtctcccc ttcttctaca tgaccacctc 960
tcctcccccc tgctcaggcc agctgtctct gaacgagttt gttgaaggtg cccgtcggga 1020
caagtgggtg atgaagatgc tgcagatgga catgaatccc agcagctggc tcgctcagca 1080
gagacggaaa agtgccatgt tctgaggagt ctggggcccc tccacgactc caggctcacc 1140
caggtttcca gggtagtagg agggtccccc ggctcagcct gctcatgccc actcttcccc 1200
tggtgttgac ttcctggcac cccctgtgca gggctgagtg gggatgggga agggctgctg 1260
ggtttgaagt ggccaacagg gcatagtcca ttttggagga gtccctggga tggtgaaggg 1320
aattcagtta cttttcctgt tcagccgctc ctgggaggac tgtgccttgg ctgggtggtt 1380
gtggggctcc cacagtttct gggtgttctc agttggaagc aagagccaac tgaggggtga 1440
gggtcccaca gaccaaatca gaaatgagaa cacaaagact ggtaggaggc aggggtggga 1500
gggtgttgag actgaagaaa aggcaggagt tgccgggcac ggtggctcac gcctgtaatc 1560
ccagcacttt gggaggccga ggcgggcaga tcacgaggtc aggagatcga gaccatcctg 1620
gctaacacgg ggtgaaaccc cgtctctact aaaaatacaa aaaatcagcc gggtgaggtg 1680
gcgggcgcct gtagtcccag ctactcagga ggctgaggca agagaatggc gtgaacccca 1740
gggggccgag cctacagtga gccgagattg cgccactgca ctccagcctg gacgacagtg 1800
agactccgtc tcaaaaaaaa aaaaagaaag aaaagaaaag gcaggagttt tgggggggcag 1860
ggggcagcaa taattctata acttccggga tgctgagggg cgttcatggg gaggaccctg 1920
gcctcctcct ccccaaggca tcctcaccag tggtgtcaac aggaaaaatg gcagcaaata 1980
cgctgcaggc tgtggtcttt ctgcctttga aagggtcagc tgtacttaaa gggactgttt 2040
cagctctgcc tgggtgctgc tctgggaccc cctgctgcca acccaccact cccccaacaa 2100
tcctctcttt ccatccatat cccccagtat ggaccttcca caactcccag ccataagctg 2160
aatgtttctc tttaaaggat ggagaaaact tctgtctgtc tctggcaaga attgggggac 2220

tgttgactgg gattgtgggc tgggcttggc ttctaactgc tgtgtgaccc aagacagcca 2280
cttctcctcc ctaaccttgg ttatgtcttg gcagcacagt gagcaggtcg gactaggcga 2340
acagttttgg attattgtgt ttttagatgt ggaattattt tttgttatat aaactcttat 2400
gtgtaacccc aatatagaaa ctagattaaa agggagtctc tctggttgaa aggggagctg 2460
agtaccctct ggaactggag gcacctctga aaaaagcaaa ctgaaaacca gtgccctggg 2520
tcactgttac tcctataaga cagtttaaag tgagacctgg aaaaacattt gctttacctt 2580
gaatagatag gtttttatgt tggtatataa gaaataaaac taacctatta accctgagac 2640
tttacaggtg tgttatttca tatgatagtc atataaaatt tcctttagac atcaatttta 2700
ggtaaaaaat aattgattag aaaaatattg gccaggtgca gcagctcaca cctgcaatcc 2760
caggactttg ggaggccgag gcgggtggat cacctgaggt caggggttca agaccagcct 2820
g 2821

<210> 7
<211> 1205
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:1b4

<220>
<221> modified_base
<222> (916)
<223> n is A, C, G, T, or U

<220>
<221> modified_base
<222> (937)
<223> n is A, C, G, T, or U

<400> 7
gcgcgcgtga gtccgccccc ccagtcacgt gaccgctgac tcggggcgtt ctccactatc 60
gcttacctac ctccctctgc aggaacccgg cgatatggct gccgctgtgc cccgcgccgc 120
atttctctcc ccgctgcttc ccttctcctg ggcttcctgc tcctctccgc tccgcatggc 180
ggcagcggcc tgcacaccaa ggcgcccttc ccctggatac ggtcactttc tacaaggtca 240
ttcccaaaag caagttcgtc tggtgaagtt cgacacccag tacccctacg gtgagaagca 300
ggatgagttc aagcgtcttc tgaaaactcg gcttccagcg atgatctctt ggtggcagag 360
gtggggatct cagattatgt gacaagctga acatggagct gagtgagaaa tacaagctgg 420
acaaagagag ctacccatct tctacctctt ccgggatggg gactttgaga acccagtccc 480
atacactggg gcagttaggt tggagccatc cagcgctggc tgaaggggca aggggtctac 540
ctaggtatgc ctggtgcctg cctgtatacg acgccctggc cggggagttc atcagggcct 600
ctggtgtgga ggccgccagg ccctcttgaa gcaggggcaa gataacctct caagtgtgaa 660
ggagactcag aagagtgggc cgagcaatac ctgaagatca tggggaagat cttagaccaa 720
ggggagcact tccagcatca gagatgacac ggatcgccag gctgattgag aagaacaaga 780
tgagtgacgg cagaaggagg agctccagaa gagcttaaac atcctgactg ccttccagaa 840
gaaggggccc gagaaagagg agctgtaaaa aggctgtctg tgattttcca gggtttggtg 900
ggggtaggga gggganagtt aacctgctgg ctgtgantcc cttgtggaat ataaggggy 960
mskgggaaaa gwggtactaa cccacgattc tgagccctga gtatgcctgg acattgatgc 1020
taacatgacc atgcttggga tgtctctagc tggtctgggg atagctggag cacttactca 1080
ggtggctggt gaaatgacac ctcagaagga atgagtgcta tagagaggag agaggagtgt 1140
actgcccagg tctttgacag atgtaattct cattcaatta aagtttcagt gttttggtta 1200
agtgg 1205

<210> 8
<211> 455
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:20sa7

<220>
<221> modified_base
<222> (57)
<223> n is A, C, G, T, or U

<220>
<221> modified_base
<222> (449)

<400> 8
gaaatcagaa gtttaatatg acacaattaa atatatttgt atatctcaca ccggagnttc 60
tcttcaaaca taaggagtta gaaattacaa gtaggcatat gcttcctata ttcagataaa 120
ttcatttcga ttaattaaat tccagataga gagaagtaat tttcggaaaa gaaatgatag 180
ctatattaaa gcagatattc attacaatac catgtagaga cataagcaat attttggcat 240
cattctgtcc gctcagtagg ccgtgttccc tctggtaggg cctttggaga gtaccatcta 300
tctaagatgg aggaatgctg tgggaagggc gggatggagg tgcgttttct acgctgaacc 360
ccacacagga aatctgcagc ccacacagct gcctctgcgc cgccttccat gtgatcatcc 420
tggtcaatga agtgaattgt cctatttcng ggggt 455

<210> 9
<211> 10365
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:Genomic
Sequence encoding ZABC1

<400> 9
ccatcatatt tcttattttt ttgggcggag aggggagact tgctctgttg cccaggctgg 60
accagtggtg cgatcttggc tcactgcaac ctccacctcc tgggttcaag tgattcccaa 120
atagctggga ttacaggtgt gtattaccat gcccagctaa tttttgtatt tttagcagat 180
aaggggtttc accatgttgg ccaggctggt ctccaactcc tggcctcatg tgatccaccc 240
acttcggctt cccaaagcat tgggagtata ggtgtgagcc actatacccg tcctcacatc 300
atatttctaa tcccgagact gtagagctgg tgtctctttt tctaaaggat gtcagtagag 360
aagtggagtt ccccaaaatt acagtttcac gtattagtca agtttctaaa atacagtaat 420
aatgttgaga gctgacatag ggactaactt ggtttttttt ttttttttct ttttcaaat 480
tctcactgaa ctttgatttt gctaaataag gacattaaaa aaaaaaccaa aaaactccac 540
tattgcctat tgccactatt tgatttttta aaaaataagc gtattttagc atctaaaagt 600
aggaaggacc tcaaataaat gagtctttgt tcttggccag ggaaaacagc gttgtcagaa 660
tttgataact gtttttctag ggtatgtgct gttattcagt taaaaccttg cctgggacgc 720
tagcattcag taaatacttg ttgaataagc aaatgaaact taagcttcta tgtatagaaa 780
cctaagtcac ttcacattct gattagcaga gtaattgaat attcttttca atgtgtagct 840
ctatccccag aaccacagaa tattggaact gtaaaggcca tcctatagtt taaccaactg 900
cgttaaatag ataatagaaa gatgtggtat gtggcagtga caacttgaag gttgtgacta 960
gaactcgggt ctctggagtg ttctattata tcacaccaag ctggtcacca gcccatgtgt 1020
tgatcctcca ttgtgatagc aacaaagaaa agacttcagg acattctttc ctttacccta 1080
atccttgatc tgcagtctta tttagaaaag cttaatgtta aagatctagt ttattcaaaa 1140
ctaaagataa caaggagtat gagaatttct atttcggagt gtaaaggagg agatgtttcc 1200
ttggcttctc tgagcctgca ggccttcctt gctctttaag gaagtagaga gagggaggaa 1260
agtaaagtat gcttttgttt tttaaggtta ctttgctggg agtagtttgc atgccttttg 1320
gttttcttgg gtggaattaa ctgacttaag ttttaagtag ttgggactat ttaaaaacaa 1380
tgcctatcca atgtttgcca taaaggcaga gggtattggc tttagaagtt aattcttctc 1440

caggagtgaa aattagcttc taaaccagaa gcagcagagc taaataaagt aattttccac 1500
ctggccagtg catgatgtga aaggtagatt aaaaaaatga gagggcccat tttctgatga 1560
aagactaagc catgttgaaa cagccctgtt gaggatttta ttttaaatct atacattcac 1620
aaaggagctt tgtgtatgtc tttccctatt tgttgtttgg actaggaagc cccacccagt 1680
gcttgttgaa ggcagaaagt cgttgaaagc aagctgggat ttgaacagtg gattgaggtt 1740
tcgaatatcc agtgaaccaa aatatatcag ggttcccctg gccaagatga gtgaccattc 1800
tgaggtgtta agtatttctt gaatggggat tttaggaaaa gtttctgtat ttctgtgctc 1860
attttgttga cctctgtatg tgcaaaatct ctaagggggt gtttgggcac ttagatttct 1920
tggatgcaga tttgtttgta tatgaaacaa attttaaatt gttttgtata cactggattt 1980
aaaatagttt actaaagtgt tttaattttt tcatcttaat tttcacagtt cttatagtct 2040
ttagatttag ggaggctgtt gatggcatcc acatgtgcat tttagtggca tttaaaatgt 2100
attcagctga atttaacaat ttctgaccta aaacttgaca ttttagattt aagtcggtaa 2160
agcactgatt taaactggat tttaactgga tgaaattctg atttaataag tgtactgact 2220
ggataaaatg ccaatgattt aattaacaag cacgtttaac aggatgccct atatattagt 2280
taaaagtgaa gcaattgaat taggtacctt ctctgctgcg tggaaaagac cgtatgactc 2340
acccacacca gccttctctt cgctctgagt gtagctaacc gtttctgttt tttttcctct 2400
agggtttgga aatcccttgt ctccaggttg ctgggattga cttcttgctc aattgaaaca 2460
ctcattcaat ggagacaaag agaactaatg ctttgtgctg attcatattt gaatcgaggc 2520
attgggaacc ctgtatgcct tgtttgtgga aagaaccagt gacaccatca ctgagcttcc 2580
taaaagttcg aagaagttag aggactatac actttctttt gaacttttat aataaatatt 2640
tgctctggtt tttggaaccc agggctgtta gaggggtgag tgacaagtct tacaagtggc 2700
cttattccaa ctccagaaat tgcccaacgg aactttgaga ttatatgcaa tcgaaagtga 2760
caggaaacat gccaactcaa tccctcttaa tgtacatgga tgggccagaa gtgattggca 2820
gctctcttgg cagtccgatg gagatggagg atgccttgtc aatgaaaggg accgctgttg 2880
ttccattccg agctacacaa gaaaaaaatg tcatccaaat cgaggggtat atgcccttgg 2940
attgcatgtt ctgcagccag accttcacac attcagaaga ccttaataaa catgtcttaa 3000
tgcaacaccg gcctaccctc tgtgaaccag cagttcttcg ggttgaagca gagtatctca 3060
gtccgcttga taaaagtcaa gtgcgaacag aacctcccaa ggaaaagaat tgcaaggaaa 3120
atgaatttag ctgtgaggta tgtgggcaga catttagagt cgcttttgat gttgagatcc 3180
acatgagaac acacaaagat tctttcactt acgggtgtaa catgtgcgga agaagattca 3240
aggagccttg gtttcttaaa aatcacatgc ggacacataa tggcaaatcg ggggccagaa 3300
gcaaactgca gcaaggcttg gagagtagtc cagcaacgat caacgaggtc gtccaggtgc 3360
acgcggccga gagcatctcc tctccttaca aaatctgcat ggtttgtggc ttcctatttc 3420
caaataaaga aagtctaatt gagcaccgca aggtgcacac caaaaaaact gctttcggta 3480
ccagcagcgc gcagacagac tctccacaag gaggaatgcc gtcctcgagg gaggacttcc 3540
tgcagttgtt caacttgaga ccaaaatctc accctgaaac ggggaagaag cctgtcagat 3600
gcatccctca gctcgatccg ttcaccacct tccaggcttg gcagctggct accaaaggaa 3660
aagttgccat ttgccaagaa gtgaaggaat cggggcaaga agggagcacc gacaacgacg 3720
attcgagttc cgagaaggag cttggagaaa caaataaggg cagttgtgca ggcctctcgc 3780
aagagaaaga gaagtgcaaa cactcccacg gcgaagcgcc ctccgtggac gcggatccca 3840
agttacccag tagcaaggag aagcccactc actgctccga gtgcggcaaa gctttcagaa 3900
cctaccacca gctggtcttg cactccaggg tccacaagaa ggaccggagg gccggcgcgg 3960
agtcgcccac catgtctgtg gacgggaggc agccggggac gtgttctcct gacctcgccg 4020
cccctctgga tgaaaatgga gccgtggatc gaggggaagg tggttctgaa gacggatctg 4080
aggatgggct tcccgaagga atccatctgg gtaagctgcc ctgtctccgt cccgtgctgt 4140
tccgcctgtg tctgtctgtc tccccgtctc cccctctcta ttcccatctc cagacaacgc 4200
tggccaggaa tggggtttgg agagccagag tcaagtccag gctctttttg gtatcactct 4260
gtgtaagtca tttaacctct cagggcctta attttctcat ttctgtaata acagggttga 4320
gttaagaggt ctccttgttc tgaaaatata tatatatttt ttaaacgtgt atcgttttgc 4380
tcacaaaaca cactttaaaa aaaaaataac ttgtgcatcc agcccaaatg cactgcttct 4440
taactggggc gattttgttc ccaatcagta tctggcaatg tctggaggca ttttggttgt 4500
catactgtgt gtgtgggtgt gcctgctggc atccagtggg cagaggccag ggacactgct 4560
cagcatggta cagtgcacag gacagcccca tcatcaaaga attatctggt cccaaatgtc 4620
aatagtttga gcattgagag accctagcct tcacttaagt ttttctggcg ttcctgatct 4680
ttttctgtag tgaatttcta gtggccataa aaggtactgg gagtgatcaa ctagagccag 4740
gaatattatt tgggcagccg tttggtgctg tccaaaacct tgtcctttct gtctggcaag 4800
ctagtatcca tttataggta cctcaggaac ccaaatgatt tgtcataaaa tacaaggaat 4860

gtgagcacac tgaagacatt tttaagaagg ctcatttgct cagcagaatt ttcagtgtac 4920
tagtggcatt tatagaaaga gaaggtgatc actgaaggca tgctcacata atattcctga 4980
gccctggtgg gcgttatcta gggcaaagga ttccacctgt gtttggagtt gcgcccatcc 5040
tcactgtagc cagagcttct cctatcagag tttagtattt tgtttgaata gaggatcttg 5100
ctgcttaaaa cagttgaaaa gaccctgatg ggcaggccgt aattgacaag cgaatgatgg 5160
gaacatgaat cggtcttagg gaagcatctg tcaaagtggt ccttggttaa aacaagtgcc 5220
tcctcctctc agtgtcactt gattgtgtgc ttgaattctt cggaaaactg ggtgtatgag 5280
acccacgatg aatttgccca cacgattgat tggactcttc cttcacctgc tcttcagcca 5340
gtgccagttc cttttctgat catgtgattg acgtgagaac tgtagtctgt atatcaaatc 5400
tttagaatgt ttttgagttt cctgggacac aggaaaccca gcacttagca tactacaaat 5460
ctaatgtctt aatggcatca taaaaagagg ctttaaacac agactccagt tagctaagtg 5520
gtttctgcta gtgccggtac tgttgcaggg gccctgtgag atgccccagt tccctgaaag 5580
aaatgaaaag gccagttacc ggtaggtggt gtggaaaaca tgggctagat catcaggcag 5640
gacagaatgc ctggctgtgg gtgggagcac cccagcttgg cgttgagttc tggttctacc 5700
actgcgttgt tttgtgacca attatgagtt gcttaacctt tctttgctac tatttccctg 5760
tttgcaaaat ggttcattga cccctgtctt ccacctccca aggacaattt caacagccta 5820
tttgtaaaaa gatcacagtc ctttaaaaaa tataactgta aagtcagagg tgatgcttga 5880
aagagcagga accaggtaga tgtggaaatg tcatgtcctt tgttctaaag aaaaggcatt 5940
tcatagcttt ttggatatga cgcaacatac cataaatcct gacacatagt tgggagtcgg 6000
aaattgcaac aacgcccagt tataaaccca gctagtttgg gtatgattgt aagaaaaaaa 6060
agctggccat tctgtatttg gggaattgat tttcctaaac ttatattatc ttagtagtct 6120
agatttatca tattgtacta tcatcctggc ttttttaaga cttaagaaga tcaagtaaat 6180
tttttttttct ttctttagac actatataga tcatcaaggg tgtctgtctt acaggtggat 6240
agtgatatga tctacagtga ggggacattt atttaaaact taaacattca tgtgttttgg 6300
gggtggtatt ttaacggcag cacctctgat tgtcttttgg agggctggtg tgtgtttgaa 6360
gttctgtcct ccttccagtg gactctaact tctcctgatg cacgtgagac acattgtcct 6420
attgtcctgc agaaactaaa gccaaacact gtcatctggg gacaggtttt catttgtcag 6480
atctctttcg cccacatgag tgtttgtgga caatacagcc tgctttccaa aactttgcta 6540
aattttgaca gactttccta ggtgcttgcc caatgccaga ctttcttttc tgttgaagat 6600
taagttgtgc ttgctgccct ctagtggtca gttgtttaat cctaacctta aacggcttat 6660
ttttcccctg gtggttggga agttgacggt ttgtaattgg ctcatttttc taaattattc 6720
tgaagaagat aatttttccc gccagtatgt atgtccacct tcagtttgcc agatcctgcc 6780
tgctcagaga cactgagaac cggaagctgc ccgggcaatt cagtctatga aatgatcttt 6840
cttgtgatta aggcaaacga agaactgaat gtttaatagt gtactctgct gtacccagaa 6900
aaaaacaaaa caaaatcatg ttataacact ctaaaacttc aaacaacctc caacagcatt 6960
tggtgtgtgt ctagccgttt tgttctaacc cgatgttata taaaagaatt ttttcatgct 7020
ttccaaaaat gtttatgtca agaatattta agtcagcatg ccttattcag gtacttcagc 7080
taccttctta tataaatatt tttgtttttc ctttaagata aaaatgatga tggaggaaaa 7140
ataaaacatc ttacatcttc aagagagtgt agttattgtg gaaagttttt ccgttcaaat 7200
tattacctca atattcatct cagaacgcat acaggtaaag aacttttatt tttttaacca 7260
tgcattagtt aaattatgta gttatctaat ttttttgttg ttgttgttca gatactctgc 7320
cagatccttg gactagctta aggataaata tgtagcatgt tgattgcagt ggttattttt 7380
attcttttag tgccattgta acttgagcca ttgttcttat ttgcagttca tttcttttct 7440
ttctttttttg ttttttgaga cggagtcttg ctctgtcacc tcggctggag tgcagtggtg 7500
caatttcggc tcactgcagc ctccacctcc ctggttcaag caatactcct gcctcagcct 7560
ccccagtagt tgggattaca ggtacctgcc accacacccg gctaatttct gtatttttag 7620
tagagatggg gtttcaccat gctggccagg ctggtttcga actcctgacc tcaagtgatc 7680
cgctcacctt ggcctcccat agtgttggcc tcccatagtg ctgggattac aggcgtgagc 7740
caccgcgccc ggacaaagtt catttgttta gtttatgact gctatgtcct gactcttatc 7800
ttattaaaag ctacagtatt ttaaaatgct gcatcttatg tctttatgat tgagaatgaa 7860
atgagaatct atttagtagt cttgagattg tgaaaggagc tatgacatca tgatgtagga 7920
ggctgcgtag atttgaaatt tcatctcttc cacttactat ctgtgcaccc ttgggcaagt 7980
tatttaacct ttttgtgctt ttagttttct ttgctgtaaa agtagaataa tacatatttc 8040
cctagggctg ttaggaagat taaataagtt agaagtgttg ctgttaattt ttctattgaa 8100
gataggcatt cataatttca aatattcatt acagtaagga tgataaagaa ctgatgagaa 8160
atcctatgtg atagtagatc gagaaagcaa aaggaggaaa gaagcctgtt ttcttaataa 8220
atagatattt gatctatttc agtgcttttc atacacttct ataataaagt gccatttctt 8280

gccttaggtg aaaaaccata caaatgtgaa ttttgtgaat atgctgcagc ccagaagaca 8340
tctctgaggt atcacttgga gagacatcac aaggaaaaac aaaccgatgt tgctgctgaa 8400
gtcaagaacg atggtaaaaa tcaggacact gaagatgcac tattaaccgc tgacagtgcg 8460
caaaccaaaa atttgaaaag atttttttgat ggtgccaaag atgttacagg cagtccacct 8520
gcaaagcagc ttaaggagat gccttctgtt tttcagaatg ttctgggcag cgctgtcctc 8580
tcaccagcac acaaagatac tcaggatttc cataaaaatg cagctgatga cagtgctgat 8640
aaagtgaata aaaaccctac ccctgcttac ctggacctgt taaaaaagag atcagcagtt 8700
gaaactcagg caaataacct catctgtaga accaaggcgg atgttactcc tcctccggat 8760
ggcagtacca cccataacct tgaagttagc cccaaagaga agcaaacgga gaccgcagct 8820
gactgcagat acaggccaag tgtggattgt cacgaaaaac ctttaaattt atccgtgggg 8880
gctcttcaca attgcccggc aatttctttg agtaaaagtt tgattccaag tatcacctgt 8940
ccattttgta ccttcaagac attttatcca gaagttttaa tgatgcacca gagactggag 9000
cataaataca atcctgacgt tcataaaaac tgtcgaaaca agtccttgct tagaagtcga 9060
cgtaccggat gcccgccagc gttgctggga aaagatgtgc ctcccctccc tagtttctgt 9120
aaacccaagc ccaagtctgc tttcccggcg cagtccaaat ccctgccatc tgcgaagggg 9180
aagcagagcc ctcctgggcc aggcaaggcc cctctgactt cagggataga ctctagcact 9240
ttagccccaa gtaacctgaa gtcccacaga ccacagcaga atgtgggggt ccaaggggcc 9300
gccaccaggc aacagcaatc tgagatgttt cctaaaacca gtgtttcccc tgcaccggat 9360
aagacaaaaa gacccgagac aaaattgaaa cctcttccag tagctccttc tcagcccacc 9420
ctcggcagca gtaacatcaa tggttccatc gactaccccg ccaagaacga cagcccgtgg 9480
gcacctccgg gaagagacta tttctgtaat cggagtgcca gcaatactgc agcagaattt 9540
ggtgagcccc ttccaaaaag actgaagtcc agcgtggttg cccttgacgt tgaccagccc 9600
ggggccaatt acagaagagg ctatgacctt cccaagtacc atatggtcag aggcatcaca 9660
tcactgttac cgcaggactg tgtgtatccg tcgcaggcgc tgcctcccaa accaaggttc 9720
ctgagctcca gcgaggtcga ttctccaaat gtgctgactg ttcagaagcc ctatggtggc 9780
tccgggccac tttacacttg tgtgcctgct ggtagtccag catccagctc gacgttagaa 9840
ggtattgcat gaggggcgtc gtgtttaaat ggctgcctac agtgattaat agctaatcca 9900
ggcattctca gtggagatgg taccactccc aagggtgggg ggtaggcagc cagaagttct 9960
tgggggtcac agagagaagc attcttagat acggcagtgg tttgtggtcc tccaaggctt 10020
acttaactct gtgggtttaa ctcttaaccc tgtgtatttt attcttttga tttgtttagt 10080
cttactttat ttttagagaa agggtcttgc tccgtcatct agattggagt gcagcggtgt 10140
aatcatagct tactgtagtc ttgaattcct gagttcaaga gatccttctg cctcagcttc 10200
ccaggtagct gagactatat gtgctgctac catgcacagc tgatttttaa attttttttg 10260
tagagatgga gttgcccagg ctggtcttga actcctggcc tgaggtgatc ctcctgcgtt 10320
gacctcccaa gtatcttaga ctacagatgc actccaccac gcttg 10365

<210> 10
<211> 3186
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:ZABC1 Open
Reading Frame

<400> 10
atgcaatcga aagtgacagg aaacatgcca actcaatccc tcttaatgta catggatggg 60
ccagaagtga ttggcagctc tcttggcagt ccgatggaga tggaggatgc cttgtcaatg 120
aaagggaccg ctgttgttcc attccgagct acacaagaaa aaaatgtcat ccaaatcgag 180
gggtatatgc ccttggattg catgttctgc agccagacct tcacacattc agaagacctt 240
aataaacatg tcttaatgca acaccggcct accctctgtg aaccagcagt tcttcgggtt 300
gaagcagagt atctcagtcc gcttgataaa agtcaagtgc gaacagaacc tcccaaggaa 360
aagaattgca aggaaaatga atttagctgt gaggtatgtg ggcagacatt tagagtcgct 420
tttgatgttg agatccacat gagaacacac aaagattctt tcacttacgg gtgtaacatg 480
tgcggaagaa gattcaagga gccttggttt cttaaaaatc acatgcggac acataatggc 540
aaatcggggg ccagaagcaa actgcagcaa ggcttggaga gtagtccagc aacgatcaac 600
gaggtcgtcc aggtgcacgc ggccgagagc atctcctctc cttacaaaat ctgcatggtt 660

tgtggcttcc tatttccaaa taaagaaagt ctaattgagc accgcaaggt gcacaccaaa 720
aaaactgctt tcggtaccag cagcgcgcag acagactctc cacaaggagg aatgccgtcc 780
tcgagggagg acttcctgca gttgttcaac ttgagaccaa aatctcaccc tgaaacgggg 840
aagaagcctg tcagatgcat ccctcagctc gatccgttca ccaccttcca ggcttggcag 900
ctggctacca aaggaaaagt tgccatttgc caagaagtga aggaatcggg gcaagaaggg 960
agcaccgaca acgacgattc gagttccgag aaggagcttg gagaaacaaa taagggcagt 1020
tgtgcaggcc tctcgcaaga gaaagagaag tgcaaacact cccacggcga agcgccctcc 1080
gtggacgcgg atcccaagtt acccagtagc aaggagaagc ccactcactg ctccgagtgc 1140
ggcaaagctt tcagaaccta ccaccagctg gtcttgcact ccagggtcca caagaaggac 1200
cggagggccg gcgcggagtc gcccaccatg tctgtggacg ggaggcagcc ggggacgtgt 1260
tctcctgacc tcgccgcccc tctggatgaa aatggagccg tggatcgagg ggaaggtggt 1320
tctgaagacg gatctgagga tgggcttccc gaaggaatcc atctggataa aaatgatgat 1380
ggaggaaaaa taaaacatct tacatcttca agagagtgta gttattgtgg aaagtttttc 1440
cgttcaaatt attacctcaa tattcatctc agaacgcata caggtgaaaa accatacaaa 1500
tgtgaatttt gtgaatatgc tgcagcccag aagacatctc tgaggtatca cttggagaga 1560
catcacaagg aaaaacaaac cgatgttgct gctgaagtca agaacgatgg taaaaatcag 1620
gacactgaag atgcactatt aaccgctgac agtgcgcaaa ccaaaaattt gaaaagattt 1680
tttgatggtg ccaaagatgt tacaggcagt ccacctgcaa agcagcttaa ggagatgcct 1740
tctgtttttc agaatgttct gggcagcgct gtcctctcac cagcacacaa agatactcag 1800
gatttccata aaaatgcagc tgatgacagt gctgataaag tgaataaaaa ccctacccct 1860
gcttacctgg acctgttaaa aaagagatca gcagttgaaa ctcaggcaaa taacctcatc 1920
tgtagaacca aggcggatgt tactcctcct ccggatggca gtaccaccca taaccttgaa 1980
gttagcccca aagagaagca aacggagacc gcagctgact gcagatacag gccaagtgtg 2040
gattgtcacg aaaaaccttt aaatttatcc gtgggggctc ttcacaattg cccggcaatt 2100
tctttgagta aaagtttgat tccaagtatc acctgtccat tttgtacctt caagacattt 2160
tatccagaag ttttaatgat gcaccagaga ctggagcata aatacaatcc tgacgttcat 2220
aaaaactgtc gaaacaagtc cttgcttaga agtcgacgta ccggatgccc gccagcgttg 2280
ctgggaaaag atgtgcctcc cctctctagt ttctgtaaac ccaagcccaa gtctgctttc 2340
ccggcgcagt ccaaatccct gccatctgcg aaggggaagc agagccctcc tgggccaggc 2400
aaggcccctc tgacttcagg gatagactct agcactttag ccccaagtaa cctgaagtcc 2460
cacagaccac agcagaatgt gggggtccaa ggggccgcca ccaggcaaca gcaatctgag 2520
atgtttccta aaaccagtgt ttcccctgca ccggataaga caaaaagacc cgagacaaaa 2580
ttgaaacctc ttccagtagc tccttctcag cccaccctcg gcagcagtaa catcaatggt 2640
tccatcgact accccgccaa gaacgacagc ccgtgggcac ctccgggaag agactatttc 2700
tgtaatcgga gtgccagcaa tactgcagca gaatttggtg agccccttcc aaaaagactg 2760
aagtccagcg tggttgccct tgacgttgac cagcccgggg ccaattacag aagaggctat 2820
gaccttccca agtaccatat ggtcagaggc atcacatcac tgttaccgca ggactgtgtg 2880
tatccgtcgc aggcgctgcc tcccaaacca aggttcctga gctccagcga ggtcgattct 2940
ccaaatgtgc tgactgttca gaagccctat ggtggctccg ggccacttta cacttgtgtg 3000
cctgctggta gtccagcatc cagctcgacg ttagaaggtc ttggtggatg tcagtgctta 3060
ctccccatga aattaaattt tacttcatcc tttgagaagc gaatggtgaa agctactgaa 3120
ataagctgtg attgtactgt acataaaaca tatgaggaat ctgcaaggaa cactacagtt 3180
gtgtaa 3186

<210> 11
<211> 1061
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:ZABC1 Protein

<400> 11
Met Gln Ser Lys Val Thr Gly Asn Met Pro Thr Gln Ser Leu Leu Met
1 5 10 15
Tyr Met Asp Gly Pro Glu Val Ile Gly Ser Ser Leu Gly Ser Pro Met

20 25 30

Glu Met Glu Asp Ala Leu Ser Met Lys Gly Thr Ala Val Val Pro Phe
35 40 45

Arg Ala Thr Gln Glu Lys Asn Val Ile Gln Ile Glu Gly Tyr Met Pro
50 55 60

Leu Asp Cys Met Phe Cys Ser Gln Thr Phe Thr His Ser Glu Asp Leu
65 70 75 80

Asn Lys His Val Leu Met Gln His Arg Pro Thr Leu Cys Glu Pro Ala
85 90 95

Val Leu Arg Val Glu Ala Glu Tyr Leu Ser Pro Leu Asp Lys Ser Gln
100 105 110

Val Arg Thr Glu Pro Pro Lys Glu Lys Asn Cys Lys Glu Asn Glu Phe
115 120 125

Ser Cys Glu Val Cys Gly Gln Thr Phe Arg Val Ala Phe Asp Val Glu
130 135 140

Ile His Met Arg Thr His Lys Asp Ser Phe Thr Tyr Gly Cys Asn Met
145 150 155 160

Cys Gly Arg Arg Arg Lys Glu Pro Trp Phe Leu Lys Asn His Met Arg
165 170 175

Thr His Asn Gly Lys Ser Gly Ala Arg Ser Lys Leu Gln Gln Gly Leu
180 185 190

Glu Ser Ser Pro Ala Thr Ile Asn Glu Val Val Gln Val His Ala Ala
195 200 205

Glu Ser Ile Ser Ser Pro Tyr Lys Ile Cys Met Val Cys Gly Phe Leu
210 215 220

Phe Pro Asn Lys Glu Ser Leu Ile Glu His Arg Lys Val His Thr Lys
225 230 235 240

Lys Thr Ala Phe Gly Thr Ser Ser Ala Gln Thr Asp Ser Pro Gln Gly
245 250 255

Gly Met Pro Ser Ser Arg Glu Asp Phe Leu Gln Leu Phe Asn Leu Arg
260 265 270

Pro Lys Ser His Pro Glu Thr Gly Lys Lys Pro Val Arg Cys Ile Pro
275 280 285

Gln Leu Asp Pro Phe Thr Thr Phe Gln Ala Trp Gln Leu Ala Thr Lys
290 295 300

Gly Lys Val Ala Ile Cys Gln Glu Val Lys Glu Ser Gly Gln Glu Gly
305 310 315 320

Ser Thr Asp Asn Asp Asp Ser Ser Ser Glu Lys Glu Leu Gly Glu Thr

325 330 335

Asn Lys Gly Ser Cys Ala Gly Leu Ser Gln Glu Lys Glu Lys Cys Lys
340 345 350

His Ser His Gly Glu Ala Pro Ser Val Asp Ala Asp Pro Lys Leu Pro
355 360 365

Ser Ser Lys Glu Lys Pro Thr His Cys Ser Glu Cys Gly Lys Ala Phe
370 375 380

Arg Thr Tyr His Gln Leu Val Leu His Ser Arg Val His Lys Lys Asp
385 390 395 400

Arg Arg Ala Gly Ala Glu Ser Pro Thr Met Ser Val Asp Gly Arg Gln
405 410 415

Pro Gly Thr Cys Ser Pro Asp Leu Ala Ala Pro Leu Asp Glu Asn Gly
420 425 430

Ala Val Asp Arg Gly Glu Gly Gly Ser Glu Asp Gly Ser Glu Asp Gly
435 440 445

Leu Pro Glu Gly Ile His Leu Asp Lys Asn Asp Asp Gly Gly Lys Ile
450 455 460

Lys His Leu Thr Ser Ser Arg Glu Cys Ser Tyr Cys Gly Lys Phe Phe
465 470 475 480

Arg Ser Asn Tyr Tyr Leu Asn Ile His Leu Arg Thr His Thr Gly Glu
485 490 495

Lys Pro Tyr Lys Cys Glu Phe Cys Glu Tyr Ala Ala Ala Gln Lys Thr
500 505 510

Ser Leu Arg Tyr His Leu Glu Arg His His Lys Glu Lys Gln Thr Asp
515 520 525

Val Ala Ala Glu Val Lys Asn Asp Gly Lys Asn Gln Asp Thr Glu Asp
530 535 540

Ala Leu Leu Thr Ala Asp Ser Ala Gln Thr Lys Asn Leu Lys Arg Phe
545 550 555 560

Phe Asp Gly Ala Lys Asp Val Thr Gly Ser Pro Pro Ala Lys Gln Leu
565 570 575

Lys Glu Met Pro Ser Val Phe Gln Asn Val Leu Gly Ser Ala Val Leu
580 585 590

Ser Pro Ala His Lys Asp Thr Gln Asp Phe His Lys Asn Ala Ala Asp
595 600 605

Asp Ser Ala Asp Lys Val Asn Lys Asn Pro Thr Pro Ala Tyr Leu Asp
610 615 620

Leu Leu Lys Lys Arg Ser Ala Val Glu Thr Gln Ala Asn Asn Leu Ile

625 630 635 640

Cys Arg Thr Lys Ala Asp Val Thr Pro Pro Pro Asp Gly Ser Thr Thr
645 650 655

His Asn Leu Glu Val Ser Pro Lys Glu Lys Gln Thr Glu Thr Ala Ala
660 665 670

Asp Cys Arg Tyr Arg Pro Ser Val Asp Cys His Glu Lys Pro Leu Asn
675 680 685

Leu Ser Val Gly Ala Leu His Asn Cys Pro Ala Ile Ser Leu Ser Lys
690 695 700

Ser Leu Ile Pro Ser Ile Thr Cys Pro Phe Cys Thr Phe Lys Thr Phe
705 710 715 720

Tyr Pro Glu Val Leu Met Met His Gln Arg Leu Glu His Lys Tyr Asn
725 730 735

Pro Asp Val His Lys Asn Cys Arg Asn Lys Ser Leu Leu Arg Ser Arg
740 745 750

Arg Thr Gly Cys Pro Pro Ala Leu Leu Gly Lys Asp Val Pro Pro Leu
755 760 765

Ser Ser Phe Cys Lys Pro Lys Pro Lys Ser Ala Phe Pro Ala Gln Ser
770 775 780

Lys Ser Leu Pro Ser Ala Lys Gly Lys Gln Ser Pro Pro Gly Pro Gly
785 790 795 800

Lys Ala Pro Leu Thr Ser Gly Ile Asp Ser Ser Thr Leu Ala Pro Ser
805 810 815

Asn Leu Lys Ser His Arg Pro Gln Gln Asn Val Gly Val Gln Gly Ala
820 825 830

Ala Thr Arg Gln Gln Gln Ser Glu Met Phe Pro Lys Thr Ser Val Ser
835 840 845

Pro Ala Pro Asp Lys Thr Lys Arg Pro Glu Thr Lys Leu Lys Pro Leu
850 855 860

Pro Val Ala Pro Ser Gln Pro Thr Leu Gly Ser Ser Asn Ile Asn Gly
865 870 875 880

Ser Ile Asp Tyr Pro Ala Lys Asn Asp Ser Pro Trp Ala Pro Pro Gly
885 890 895

Arg Asp Tyr Phe Cys Asn Arg Ser Ala Ser Asn Thr Ala Ala Glu Phe
900 905 910

Gly Glu Pro Leu Pro Lys Arg Leu Lys Ser Ser Val Val Ala Leu Asp
915 920 925

Val Asp Gln Pro Gly Ala Asn Tyr Arg Arg Gly Tyr Asp Leu Pro Lys

```
    930                 935                 940

Tyr His Met Val Arg Gly Ile Thr Ser Leu Leu Pro Gln Asp Cys Val
945                 950                 955                 960

Tyr Pro Ser Gln Ala Leu Pro Pro Lys Pro Arg Phe Leu Ser Ser Ser
                965                 970                 975

Glu Val Asp Ser Pro Asn Val Leu Thr Val Gln Lys Pro Tyr Gly Gly
            980                 985                 990

Ser Gly Pro Leu Tyr Thr Cys Val Pro Ala Gly Ser Pro Ala Ser Ser
        995                1000                1005

Ser Thr Leu Glu Gly Leu Gly Gly Cys Gln Cys Leu Leu Pro Met Lys
   1010                1015                1020

Leu Asn Phe Thr Ser Ser Phe Glu Lys Arg Met Val Lys Ala Thr Glu
1025                1030                1035                1040

Ile Ser Cys Asp Cys Thr Val His Lys Thr Tyr Glu Glu Ser Ala Arg
                1045                1050                1055

Asn Thr Thr Val Val
            1060
```

<210> 12
<211> 3066
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:1b1

<400> 12
```
ggaaacagct atgaccatga ttacgccaag ctcgaaatta accctcacta aagggaacaa 60
aagctggagc tccaccgcgg tggcggccgc tctagaacta gtggatcccc cgggctgcag 120
gaattcggca cgaggctcca ccgacagcca ggcactgggc agcacgcact ggagacccag 180
gaccctgtgc aggagcagct ccgggtgaca cgaggggact gaagatactc ccacaggggc 240
tcagcaggag caatgggtaa ccaaatgagt gttccccaaa gagttgaaga ccaagagaat 300
gaaccagaag cagagactta ccaggacaac gcgtctgctc tgaacggggt tccagtggtg 360
gtgtcgaccc acacagttca gcacttagag gaagtcgact tgggaataag tgtcaagacg 420
gataatgtgg ccacttcttc ccccgagaca acggagataa gtgctgttgc ggatgccaac 480
ggaaagaatc ttgggaaaga ggccaaaccc gaggcaccag ctgctaaatc tcgtttttc 540
ttgatgctct ctcggcctgt accaggacgt accggagacc aagccgcaga ttcatccctt 600
ggatcagtga agcttgatgt cagctccaat aaagctccag cgaacaaaga cccaagtgag 660
agctggacac ttccggtggc agctggaccg gggcaggaca cagataaaac cccagggcac 720
gccccggccc aagacaaggt cctctctgcc gccagggatc ccacgcttct cccacctgag 780
acaggggggag caggaggaga agctccctcc aagcccaagg actccagctt ttttgacaaa 840
ttcttcaagc tggacaaggg acaggaaaag gtgccaggtg acagccaaca ggaagccaag 900
agggcagagc atcaagacaa ggtggatgag gttcctggct tatcagggca gtccgatgat 960
gtccctgcag ggaaggacat agttgacggc aaggaaaaag aaggacaaga acttggaact 1020
gcggattgct ctgtccctgg ggacccagaa ggactggaga ctgcaaagga cgattcccag 1080
gcagcagcta tagcagagaa taataattcc atcatgagtt tctttaaaac tctggtttca 1140
cctaacaaag ctgaaacaaa aaaggaccca gaagacacgg gtgctgaaaa gtcacccacc 1200
acttcagctg accttaagtc agacaaagcc aactttacat cccaggagac ccaaggggct 1260
```

ggcaagaatt ccaaaggatg caacccatcg gggcacacac agtccgtgac aacccctgaa 1320
cctgcgaagg aaggcaccaa ggagaaatca ggacccacct ctctgcctct gggcaaactg 1380
ttttggaaaa agtcagttaa agaggactca gtccccacag gtgcggagga gaatgtggtg 1440
tgtgagtcac cagtagagat tataaagtcc aaggaagtag aatcagcctt acaaacagtg 1500
gacctcaacg aaggagatgc tgcacctgaa cccacagaag cgaaactcaa aagagaagaa 1560
agcaaaccaa gaacctctct gatggcgttt ctcagacaaa tgtcagtgaa aggggatgga 1620
gggatcaccc actcagaaga aataaatggg aaagactcca gctgccaaac atcagactcc 1680
acagaaaaga ctatcacacc gccagagcct gaaccaacag gagcaccaca gaagggtaaa 1740
gagggctcct cgaaggacaa gaagtcagca gccgagatga acaagcagaa gagcaacaag 1800
caggaagcca aagaaccagc ccagtgcaca gagcaggcca cggtggacac gaactcactg 1860
cagaatgggg acaagctcca aaagagacct gagaagcggc agcagtccct tgggggcttc 1920
tttaaaggcc tgggaccaaa gcggatgttg gatgctcaag tgcaaacaga cccagtatcc 1980
atcggaccag ttggcaaacc caagtaaaca aatcagcacg gttcccacca ggttctcctg 2040
ccaccaagat gtgttctcct tactccatct cctccccaaa cacgctccat gtatatattc 2100
ttctgatggc cagcaaatga aattctgcct agaaattaag cccgagctgt tgtatattga 2160
ggtgtattat ttacgtctct ggtccagtct tttctggcaa ataacagtaa agatggttta 2220
gcaggtcacc tagttgggtc agaagagtcg atgatcacca agcaggaaag ggagggaata 2280
gaggaatgtg ttcgggttaa gtgatgaaaa tggcagtggt ggccgggcgt ggtggctctc 2340
gcctgtaatc tcagcacttt gggaggccga ggcaggtgga tcacctgagg tcaggagttc 2400
aagactagcc tggccaacat catgaaaccc cgtctctact aaaaatacaa aaattagcca 2460
ggcatggtgg cacacacctg tagtcccagc tactcgggag cccaacgcac gagaaccgct 2520
tgtacccagg aggtggaggt tgcagtgagc cgaagttgca ccattgcact ccaccctggg 2580
cgacagagca agattctatc aaaaaaaaaa ggcagtggca agtaagttat agaagagaaa 2640
tgctgctaga aggaattaag cgttgtagta aacgcgtgct catcctctaa gcttgaagaa 2700
gggagacgaa aatccatttg tttaaattca catctcaagg agggagaacc cgggctgtgt 2760
tgggtggttg ccaatttcct agaacggaat gtgtggggta tagaaaaagg aatgaataag 2820
cgttgttttt caaatagggt ccttgtaagt tattgatgag agggaaaaga ttgactgggg 2880
agggcttaaa atgatttggg aaaacaattg cttttgaggc tcagtgacaa cggcaaagat 2940
tacaacttaa aaaaaaaaaa aaaaaaactc gagactagtt ctctctctct ctcgtgccga 3000
attcgatatc aagcttatcg ataccgtcga cctcgagggg gggcccggta cccaattcgc 3060
cctata 3066

<210> 13
<211> 939
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:Genomic
Sequence from BAC Clone 97 Filtered Query Sequence

<220>
<221> modified_base
<222> (191)
<223> n is A, C, G, T, or U

<220>
<221> modified_base
<222> (210)
<223> n is A, C, G, T, or U

<220>
<221> modified_base
<222> (258)
<223> n is A, C, G, T, or U

<220>

<221> modified_base
<222> (371)
<223> n is A, C, G, T, or U

<220>
<221> modified_base
<222> (418)..(514)
<223> n is A, C, G, T, or U

<220>
<221> modified_base
<222> (416)
<223> n is A, C, G, T, or U

<220>
<221> modified_base
<222> (536)
<223> n is A, C, G, T, or U

<220>
<221> modified_base
<222> (819)..(934)
<223> n is A, C, G, T, or U

<400> 13
tgtgatattg attcatgccc tcttgcacct tgccaaacat cacacgcttg ccatccagtc 60
cactcgattt tggcagtgca gatgaaaaac tgggaaccat ttgtgttgag tccagcaaga 120
tgccaggacc tgcatgtttc agaacgaagt tcttcatcat ccaatttctc cctgtatatg 180
ggcttaccac nactgccgtt aagtcgtgtn aagtcaccac tcaggtacat aatggaataa 240
ttctgcaaag gcaggagnca ctttctctcc agtgctcaga ccatgaaagt tttctgatgt 300
ctttggaact ttgtctgcaa atagctcgaa ggagacatgg cctaaaggct cgccatctgc 360
ggtgatattg naacatggta gggctgaccg tggctgtggc catgactttt tagantnnnn 420
nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 480
nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnncccaat gcgggacaga gaatcnaaga 540
aactgtatta gggaaagggt cctgagttta tgccaaagtt tcccagattg gtttccattg 600
aaacgtagct ctgtgagata ccatcaggtg ttatgtgaag aaatgtctgt gtagtcaaat 660
atgtttgagt gagtgagcct gagctgagca agactttact gcaagacttc ccatcttctg 720
tccctttta tgctaatggg taacacaaac tccaaaagtg gggtgtacag catgaggcat 780
taacaaaaat ttattggacc ccacacacnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 840
nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 900
nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnctctc   939

<210> 14
<211> 112
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:Subject Seq -
Rat Cyclophillin 64-175

<400> 14
ttcgacatca cggctgatgg cgagcccttg ggtcgcgtct gcttcgagct gtttgcagac 60
aaagttccaa agacagcaga aaactttcgt gctctgagca ctggggagaa ag   112

<210> 15
<211> 106

<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:e:Subject Seq -
Rat Cyclophilli404-348

<400> 15
tgctggacca aacacaaatg gttcccagtt ttttatctgc actgccaaga ctgagtgggg 60
ctggatggca agcatgtggt ctttgggaag gtgaaagaag gcatga 106

<210> 16
<211> 38
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:e:Subject Seq -
Rat Cyclophillin 299-336

<400> 16
agaacttcat cctgaagcat acaggtcctg gcatcttg 38

<210> 17
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:e:Subject Seq -
Rat Cyclophillin 193-220

<400> 17
tcctcctttc acagaattat tccaggat 28

<210> 18
<211> 112
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:Query Seq ID NO
13 261-372

<220>
<221> modified_base
<222> (2)
<223> n is A, C, G, T, or U

<400> 18
tncaatatca ccgcagatgg cgagccttta ggccatgtct ccttcgagct atttgcagac 60
aaagttccaa agacatcaga aaactttcat ggtctgagca ctggagagaa ag 112

<210> 19
<211> 106
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:Query Seq ID NO
13 13-117

<400> 19
tgctggactc aacacaaatg gttcccagtt tttcatctgc actgccaaaa tcgagtggga 60
ctggatggca agcgtgtgat gtttggcaag gtgcaagagg gcatga 106

<210> 20
<211> 38
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:Query Seq ID NO
13116-153

<400> 20
agaacttcgt tctgaaacat gcaggtcctg gcatcttg 38

<210> 21
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:Query Seq ID NO
13 229-256

<400> 21
tcctgccttt gcagaattat tccattat 28

<210> 22
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Forward primer

<400> 22
ttggcattgg tatcaggtag ctg 23

<210> 23
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Backward
Primer

<400> 23
ttggagcaga gaggggattg tgtg 24

<210> 24

<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:: Forward primer

<400> 24
aatcccctca aaccctgctg ctac 24

<210> 25
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Backward Primer

<400> 25
tggagcctga acttctgcaa tc 22

<210> 26
<211> 17
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:: Forward primer

<400> 26
ccgggatacc gacattg 17

<210> 27
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Backward Primer

<400> 27
tgcacataaa acagccagc 19

<210> 28
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:: Forward primer

<400> 28

ttggaatcaa tggagcaaaa 20

<210> 29
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Backward Primer

<400> 29
agctttaccc aatgtggtcc 20

<210> 30
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:: Forward primer

<400> 30
gtggtgaaca ccaataaatg g 21

<210> 31
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Backward Primer

<400> 31
aagcaaataa aaccaataaa ctcg 24

<210> 32
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:: Forward primer

<400> 32
caagatctga ccccgtcaat c 21

<210> 33
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Backward

Primer

<400> 33
gacttcttca ggaaagagat cagtg 25

<210> 34
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:: Forward primer

<400> 34
gccatgtacc cacctgaaaa atc 23

<210> 35
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Backward Primer

<400> 35
tcagaacacc cgtgcagaat taag 24

<210> 36
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:: Forward primer

<400> 36
cctaaaactt ggtgcttaaa tcta 24

<210> 37
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Backward Primer

<400> 37
gtctcacaag gcagatgtgg 20

<210> 38
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:: Forward primer

<400> 38
tttgtgtatg ttgagccatc 20

<210> 39
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Backward Primer

<400> 39
cttccaatct cattctatga gg 22

<210> 40
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:Forward Primer

<400> 40
gcttgtttaa gtgtcactag gg 22

<210> 41
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Backward Primer

<400> 41
cactctggta aatgaccttt gtc 23

<210> 42
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:: Forward primer

<400> 42
cctacaccat tccaactttg g 21

<210> 43
<211> 25

<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Backward
Primer

<400> 43
gccagatgta tgtttgctac ggaac 25

<210> 44
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:: Forward
primer

<400> 44
tctcaaacct gtccacttct tg 22

<210> 45
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Backward
Primer

<400> 45
ctgctgtggt ggagaatgg 19

<210> 46
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:: Forward
primer

<400> 46
tgtcctcctt ctccctcatc ctac 24

<210> 47
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Backward
Primer

<400> 47
aatgcctcca ctcacaggaa tg 22

<210> 48
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:: Forward primer

<400> 48
cctcttcagt gtcttcctat tga 23

<210> 49
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Backward Primer

<400> 49
gggaggaggt tgtaggcaac 20

<210> 50
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Forward primer

<400> 50
agcaaagcaa aggtggcaca c 21

<210> 51
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Backward Primer

<400> 51
tgacatggga gaagacacac ttcc 24

<210> 52
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:Forward Primer

<400> 52

aggtttacca atgtgtttgg 20

<210> 53
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Backward Primer

<400> 53
tctacatccc attctcttct g 21

<210> 54
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:: Forward primer

<400> 54
gtggtgaaca ccaataaatg g 21

<210> 55
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Backward Primer

<400> 55
aagcaaataa aaccaataaa ctcg 24

<210> 56
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Forward Primer

<400> 56
ttggaatcaa tggagcaaaa 20

<210> 57
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Backward Primer

<400> 57
agctttaccc aatgtggtcc 20

<210> 58
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:Forward Primer

<400> 58
gccatgtacc cacctgaaaa atc 23

<210> 59
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Backward
Primer

<400> 59
tcagaacacc cgtgcagaat taag 24